PATENT APPLICATION
Docket No. 9739-070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Craig Stolarczyk, et al	Conf. No.	3341
Serial No.	10/598,379	Examiner:	Amajad A. Abraham
Filed:	August 25, 2006	Art Unit:	1794
For:	RESTORING DAMAGED RAIL SEATS LOCATED ON CONCRETE RAIL TIES		

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION TRAVERSING CITED REFERENCES (37 C.F.R. 1.132)

The undersigned party hereby declares, as follows:

1. The person making this Declaration is Robert M. Loomis ("Loomis"), has worked for the Willamette Valley Company of Eugene, Oregon ("WVC"), the assignee of the above-referenced patent application, for about 16 years, and has worked as Technical Manager for WVC for about 4 years.

2. Loomis is a co-inventor in the above U.S. Patent Application No.10/598,379 and has been involved in the field of rail tie restoration for about 10 years. Loomis has also been involved in the field of restoring damaged rail seats located on concrete rail ties for more than 5 years.

3. WVC is the assignee of the Application. WVC is the leader in restoring damaged rail ties.

4. Loomis' higher education background includes a B.S. in Chemistry from the University of Oregon and an M.S. in Chemistry from the University of New Mexico.

5. In the opinion of the undersigned, the method disclosed in US Pat. No. 7,138,437 to Giorgini et al. ("Giorgini") in view of US Pat. No. 4,295,259 to Rhodes et al. ("Rhodes") as evidenced by US Pat No. 5,173,222 to Young et al. ("Young") is totally distinguishable from the method of claims 1-24 in the above referenced patent application for the reasons set forth in the my Declaration dated June 11, 2009, and the reason set forth below in paragraphs 6-14.

6. Giorgini states that foam polyurethane materials containing strength enhancers can repair defects which create "cavities" in structural members such as wooden rail ties, doors, windows, furniture, and cabinets, and in cavities formed within concrete structures. These cavities are void areas in structural members which can be filled with the polyurethane foam material of Giorgini and which must have the ability to surround and support the polyurethane foam material during the curing process. Contouring of the polyurethane material does not occur in the repair process of Giorgini. The Giorgini polyurethane foam material is not self-supporting. Instead, the polyurethane material of Giorgini must be surrounded and supported by the walls of the cavity into which it have been introduced during the curing process. Sag resistance and runoff are not a problem in the repair operation of Giorgini because these situations do not arise when a foam polymeric material is put into an enclosure which supports it during the entire curing step. A polymeric foam material in general, and a polyurethane foam per se, is not sag resistant and will runoff a surface which does not surround and support it during curing. Giorgini does not relate to restoring a damaged rail seat on the upper surface of a concrete rail tie, as described above, which is conducted without a cavity which can surround and support a non-self supporting polyurethane foam material.

7. Giorgini teaches a strength-enhanced polyurethane foam material comprising Part A which is a polyol component and part B which is an isocyanate

component. Giorgini also states that a polyamine "gelling agent" can be added to Part A. This gelled polyurethane is filled into a defect which surrounds and supports it as defined above. The polyurethane foam material is then cured to repair a rail tie. The cured polyurethane foam is employed to form a repaired wooden rail tie.

The claimed poly(urethane urea) material is not a polyurethane foam composition such as described above by Giorgini. Polyurethanes, and particularly foamable polyurethanes, cannot be contoured and cured in an unsupported manner. In this way, they are employed to restore damaged rail seats on concrete rail ties to the original dimensions of an undamaged rail seat in the manner claimed herein. The Giorgini polyurethane foam materials are not sag resistant and they cannot maintain their shape without substantial runoff from the concrete rail tie during the contouring and curing of the polymeric material.

8. Rail seat abrasion is a major problem with respect to concrete rail ties, not wooden rail ties. It is a major safety and maintenance problem for railroad companies who employ concrete rail ties. Our method successfully commercially overcomes the rail seat abrasion problem without the problems associated with the use of epoxies. Our polymeric material represents a significant improvement over epoxies. Young relates to the use of epoxy to repair concrete rail seats For example, our poly(urethane urea) material cures more quickly, does not require the use of rail holding plates, is extremely tough and is not brittle. A further discussion of the problems which result from the use of epoxies for repairing rail seat abrasion can be found in the above-referenced patent application from page 2, line 18 to page 3, line 6.

9. WVC has experimentally attempted to employ polyurethanes per se to restore damaged rail seats on concrete rail ties to the original dimensions of the undamaged rail seat in the manner claimed herein. WVC has concluded that polyurethanes are not sag resistant and that they do not maintain their shape without substantial runoff from the concrete rail tie during said contouring and curing of that polymeric material. Therefore, polyurethanes, and particularly foamable polyurethanes, as set forth in Giorgini cannot be

employed to restore a damaged rail seat since they are not sag resistant and are not able to maintain their shape without substantial runoff from the concrete rail tie during the contouring and curing of the damaged rail seat.

10. Giorgini adds a polyamine as a "gelling agent" to its polyurethane foam to form urea linkages and produce a modified polyurethane material. Even though this modified polyurethane foam material of Giorgini has urea linkages it is not a poly (urethane-urea) material which can restore a rail seat on a concrete rail tie in the manner described in our claims. The foamed modified polyurethanes to which an amine gelling agent have been added as described in Giorgini cannot be employed to restore a damaged rail seat since they are not self-supporting, more particularly, they are not sag resistant and are not able to maintain their shape without substantial runoff from a concrete rail tie during the contouring and curing of the damaged rail seat. The Giorgini polymeric materials require being located within a cavity having walls that surround and support them during the curing process in order for the polyurethane foam to maintain its shape. If Giorgini attempted to contour and cure its modified polyurethane in the manner claimed by applicants, the polymeric material would collapse and runoff.

11. The gelling agent's function in Giorgini is not to form the claimed poly (urethane-urea) material. Its purpose is to prevent environmental water at the substrate/material interface from reacting with the isocyanate component. In formulating terms, the gelling agent is described as a surface-acting agent to provide a particular property or a desired surface effect. At the surface/material interface the polyamine reacts quickly to form a 'skin' or cured surface and prevents further isocyanate-water interaction by decreasing the diffusion rate of water by density of the material. This surface-acting effect is very common in foam formulations and in particular at the atmospheric material surface where amines, both polyamine and amine catalysts, form skins or very dense surfaces over a foam. So, the mere use of polyamines to thicken the material surface and prevent the isocyanate component from further reacting with environmental moisture does not change materially change the composition of the polyurethane foam material of Giorgini. Having "urea linkages" in a polyurethane composition does not mean that

Giorgini has formed a poly (urea-urethane) material, much less a poly (urea-urethane) material as described in pending claims 1-24 of the subject patent application. As in the case of polyurethanes per se, the modified polyurethane of Giorgini are not self-supporting, are not sag resistant, and are not able to maintain their shape without substantial runoff from a concrete rail tie during the contouring and curing of a damaged rail seat.

On the other hand, we have incorporated polyamines in our formulation to actually create a polyurea network throughout the material, not just an outer skin. This in fact facilitates the formation of a poly (urethane-urea) material. This poly (urethane-urea) network prevents the material from sagging and flowing during contouring due to the presence of its three dimensional network structure. The consequence is that the claimed method is not directed to just a surface reaction as in Giorgini. Our method as claimed enhances the formation of a contoured damaged rail seat which has substantially the original dimension as an undamaged rail seat. In this way, the subject polyurethane-urea material can be dispensed on a surface without running off. Contrarily, the Giorgini material is not sag resistant, will not maintain its shape, but instead will simply roll off the surface while forming a surface skin as described above due to the presence of environmental water. Giorgini can only function within a confined space or cavity which retains and supports it until it can form a fully cured polyurethane rail hole plug because it does not have sufficient structural integrity as a stand-alone entitiy during the curing process. In Giorgini, the uncured foam polyurethane material is not sag resistant because it doesn't have to be sag resistant. The spike hole or defects described in Giorgini act a mold during the formation of the foam polyurethane. Giorgini is not self-supporting and the polyurethane foam is not capable of being contoured to form a contoured damaged rail seat having substantially the original dimensions of an undamaged rail seat because it is not sag resistant.

12. The addition of strength enhancers are required by Giorgini to give the cured polymeric material of the repaired article enough strength in order to prevent deformation during a train pass. No strength enhancers are required to be added to the polymeric

material of the claimed method for restoring a damaged rail seat located on a concrete rail tie to form a restored cured rail seat.

13. Rhodes teaches a method of repairing spike holes in a wooden railway tie which is similar to Giorgini but which is totally different than amended claim 1. Rhodes adds its polyurethane foam to a spike hole in a wooden rail tie which acts as a mold for the formation of the cured polymeric material. The repaired articles formed from the processes disclosed in Giorgini and Rhodes do not have the claimed sag resistance nor the ability to maintain its shape without substantial run-off. Contouring of the polyurethane material of Rhodes is not taught or suggest because it is not contemplated in order to accomplish the purposes stated in Rhodes. This why Rhodes can only function within a confined space or cavity which retains and supports it until it can form a fully cured polyurethane rail hole plug. Rhodes does not have sufficient structural integrity as a stand-alone entity during the curing process.

14. Young involves the use of epoxy materials which cure fairly slowly. Young's requires using equipment such as clamps for confining the epoxy material, and applying heat and pressure to the confined epoxy material. However, the claimed method employs a poly(urethane-urea) material which does not require confining equipment, nor does it need to employ heat or pressure. Even when epoxy is applied in a relatively thin layer, the cure time can take 12 to 36 hours at typical ambient temperatures. This is completely unacceptable from a train operator's point of view. If the trains are running even slowly over the freshly repaired rail seats, and if the epoxy is still in a plastic state, it will run-off. This will disrupt the true level of the rail seat, causing cavities to form in the rail seat material. This also results in improper bonding to the abrasion plate. All of these factors will lead to subsequent failure of the rail seat. Our claims define technology which is a substantial improvement over Young for the following reasons: 1) there is no confinement equipment which is required; 2) there is no pressure which is required; 3) there is no heat which is required; and 4) the claimed poly(urethane-urea) material meets the requirements which are not met by epoxy

materials such as durability, strength, adhesion, gel time, compressive loading, elongation, speed, ease of application, etc.

I hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated this 4 day of April, 2011.

Robert M. Loomis